



液晶显示器

底板: LCL17AS / LCL19YS /

LCL19AS / LCL19NS /

LCL20YS / LCL22YS /

LCL22NS

型号: E1720NR / E1720NRX /

E1920N / E1920NX /

E1920NR / E1920NRX /

E1920NW / E1920NWX /

E2020N / E2020NX /

E2220N / E2220NX /

E2220NW

维 修

手 册

薄膜液晶显示器



E1720NR/ E1720NRX/ E1920N/ E1920NX/
E1920NR/ E1920NRX/ E1920NW/
E1920NWX/ E2020N/ E2020NX/ E2220N/
E2220NX/ E2220NW

内容

1. 注意事项
2. 产品规格
3. 拆卸和重新组装
4. 故障排除
5. 分解图和零件清单
6. 接线图

如欲了解详细内容, 请参照 GSPN 中的维修手册 (见封底)。

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GSPN（全球服务合作伙伴网）

国家	网站
北美	http://service.samsungportal.com
拉美	http://latin.samsungportal.com
独联体	http://cis.samsungportal.com
欧洲	http://europe.samsungportal.com
中国	http://china.samsungportal.com
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3.拆卸和组装

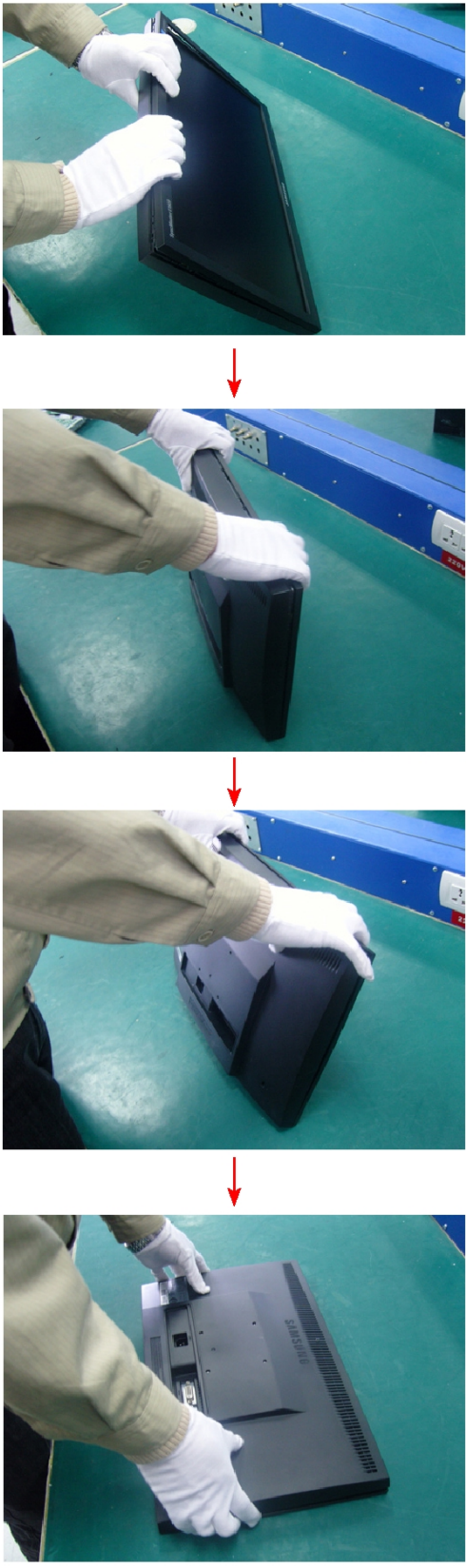
维修手册的这一章叙述本显示器的拆卸和重新组装步骤。

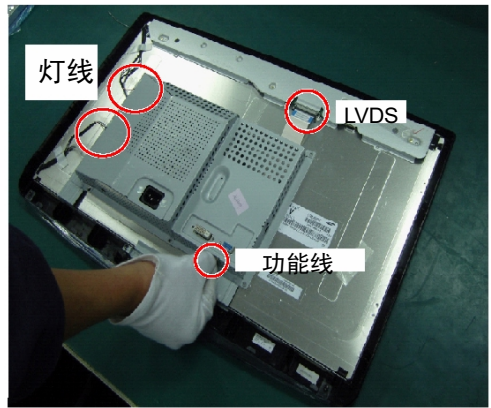
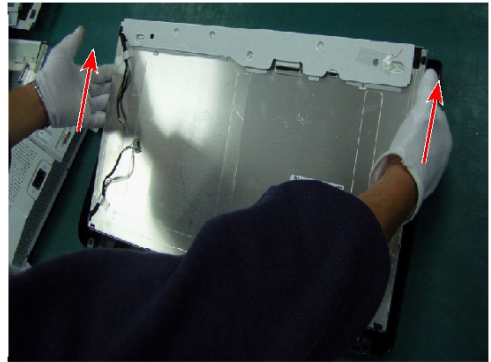
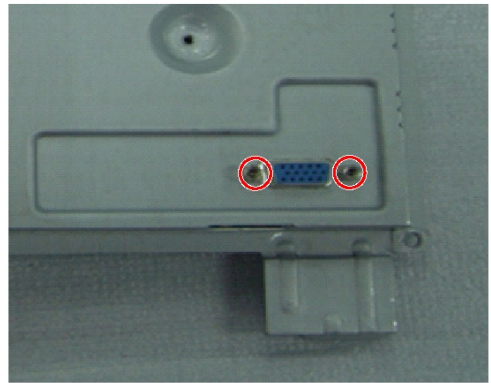
⚠ **警告：** 本显示器包含静电敏感器件，处理这些部件时应小心。

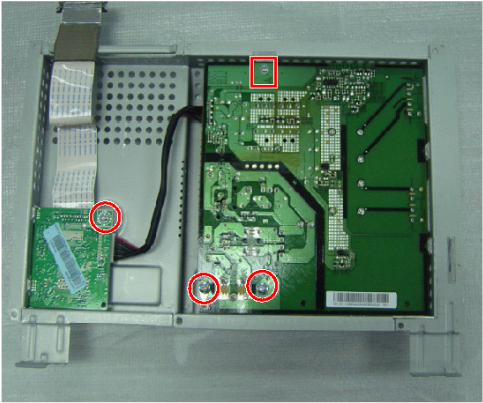
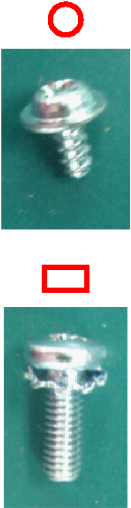
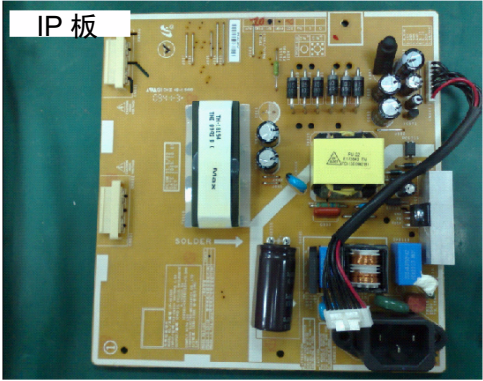
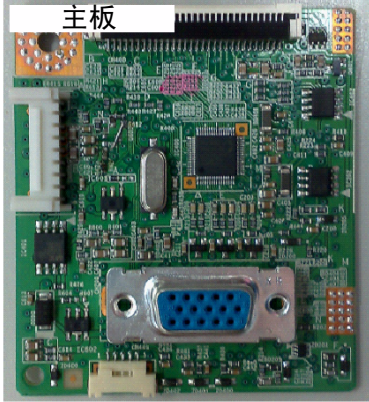
3-1.拆卸

- ⚠ **小心：**
1. 拆卸显示器前，请断开电源。
 2. 显示器拆卸时，除所提供的工具外不得使用其它金属工具。
 3. 按照如下步骤拆卸显示器。

说明	图片	螺钉
1.拆卸基座。		
2.①翻转显示器并将手指插入到显示器顶端中部并按照如图所示箭头方向将前盖卸下。 ②按照如图箭头所示方向将前盖侧边卸下。		

说明	图片	螺钉
3.再次翻转显示器。		

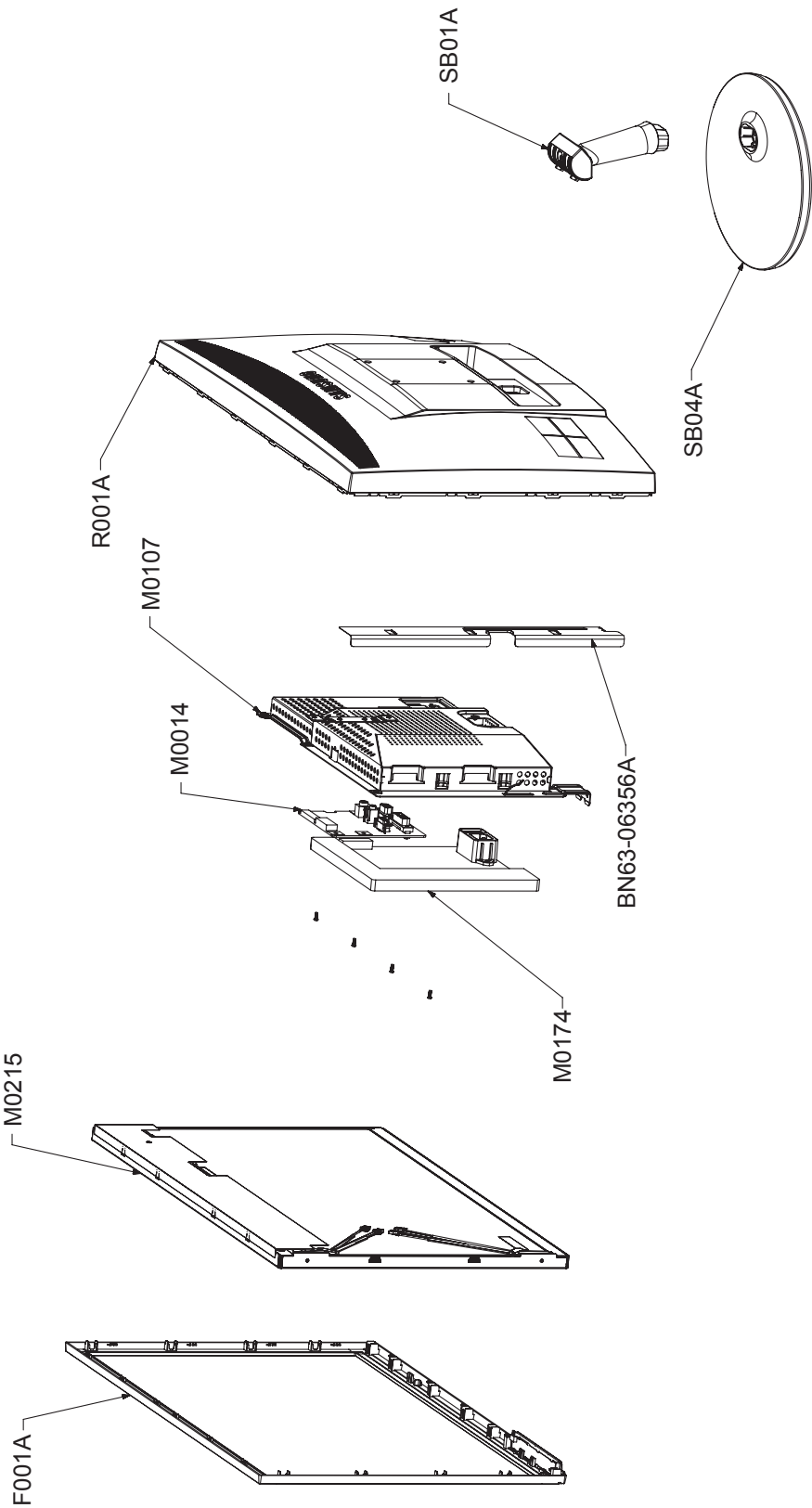
说明	图片	螺钉
4.再次翻转显示器拆卸后盖。		
5.拆卸 LVDS，灯线和功能线，然后将护板盖卸下。		
6.拆卸 LCD 屏板。		
7.拆卸如图所示的两（2）处螺钉。		

说明	图片	螺钉
8.拆卸如图所示的四（4）处螺钉，并拆卸支撑架。		
9.从护板盖上拆卸主板和 IP 板。	IP 板  主板 	

※ 组装步骤与拆卸步骤相反。

5. Exploded View & Part List

5-1. LS19CLYSB/XF - Exploded View (E1920N)



5-1-1. Parts List

Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
F001A	BN96-13091A	ASSY COVER P-FRONT;Cobalt 18.5W,ABS,HB,B	1	SA	
M0014	BN94-03397D	ASSY PCB MAIN-STZ;E1920N,STZ	1	SA	
M0107	BN63-06355C	SHIELD-COVER;PLUM 18.5",SECC,T0.8,18.5"	1	SNA	
M0174	BN44-00325B	IP BOARD;IP-22155A,PLUM15.6",18.5"w(2Lam	1	SA	
M0215	BN07-00703A	LCD-PANEL;LTM185AT01,SS8YTSV,6bit Hi-FRC	1	SA	
R001A	BN96-13090F	ASSY COVER P-REAR;Cobalt 18.5W,HIPS,HB,B	1	SA	
SB01A	BN96-12853A	ASSY STAND P-BODY;COBALT,HIPS,BK23,ETCH	1	SA	
SB04A	BN96-12816A	ASSY STAND P-BASE;COBALT 17~20,HIPS HB,B	1	SA	
	BN63-06356A	SHIELD-LAMP;PLUM 18.5",SPTE,T0.3	1	SNA	

5-2. LS19CLYSB/XF - Parts List (E1920N)

Service Bom (SA: SERVICE AVAILABLE, SNA: SERVICE NOT AVAILABLE)

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
0.1	R001A	BN90-02725B	ASSY COVER REAR;E1920N,BLACK,AMLCD	1	SNA	
..2	R001A	BN96-13090F	ASSY COVER P-REAR;Cobalt 18.5W,HIPS,HB,B	1	SA	
...3	W391	6003-000275	SCREW-TAPTYPE;BH,+,B,M3,L10,ZPC(BLK),S WR	2	SA	
...3	M0113	BN61-01581A	BRACKET-VESA;BI17/19BS,SECC,T1.0	2	SNA	
...3	T0060	BN61-05331A	SPRING ETC;LAVENDER 23",SK5,T0.5	1	SNA	
...3	CIS4	BN61-05332A	HOLDER-STAND;LAVENDER 23",ACETAL,WHITE	1	SNA	
...3	M0111	BN63-05625A	COVER-STAND;LAVENDER 23W,BK23	1	SNA	
...3	R001	BN63-06842E	COVER-REAR;Cobalt 18.5W,HIPS,HB,BK23,SIM	1	SNA	
...3	M0126	BN73-00170A	RUBBER- FOOT;943BW,2043BW,RUBBER,8*8,1.5,	3	SNA	
...3		BN96-13846A	ASSY SHIELD P-LAMP;Cobalt 18.5",STPE,T0.	1	SNA	
....4		BN63-06356A	SHIELD-LAMP;PLUM 18.5",SPTE,T0.3	1	SNA	
....4	M0131	BP63-00786A	GASKET;HLS6187WX/XAA,Conductive Adhesive	1	SNA	
0.1		BN91-02220X	ASSY LCD;LS19CFNKFY/ZA,BN07-00703A	1	SNA	
..2	M0215	BN07-00703A	LCD-PANEL;LTM185AT01,SS8YTSV,6bit Hi-FRC	1	SA	
0.1	M0017	BN91-05223N	ASSY CHASSIS-STZ;E1920NX	1	SNA	
..2	M0174	BN44-00325B	IP BOARD;IP-22155A,PLUM15.6",18.5"w(2Lam	1	SA	
..2	M0014	BN94-03397D	ASSY PCB MAIN-STZ;E1920N,STZ	1	SA	
...3		0202-001463	SOLDER-WIRE;LFC2-W3.0,-,D3,99.79Sn/0.2Cu	1.814	SNA	
...3		0202-001608	SOLDER-WIRE FLUX;LFC7-107,D0.8,99.3Sn/0.	0.003	SNA	
...3		0204-002420	SOLVENT;1M-1000,C3H70H,96	3.47	SNA	
...3		0204-002607	FLUX;DF-234U,13%,14KG,Gravity 0.82	2.259	SNA	
...3		3701-001510	CONNECTOR-DSUB;15P,3R,FEMAIL,STAMPED PIN	1	SNA	
...3	CN906	3711-005847	CONNECTOR- HEADER;BOX,9P,1R,2MM,ANGLE,SN,	1	SNA	
...3		BN97-04137D	ASSY SMD;E1920N,STZ,BN94-03397D	1	SNA	
....4		0202-001477	SOLDER-CREAM;LST309- M,D20~45um,96.5Sn/3A	0.462	SNA	
....4	DS01A	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200m A,SO	3	SA	
....4	DR01A	0402-001614	DIODE-RECTIFIER;S1G,400V,1A,DO-214AC,TP	1	SA	
....4	MZD1	0403-001411	DIODE-ZENER;5.49-5.73V,200mW,SOD-323,TP	8	SA	
....4		0403-001712	DIODE-ZENER;QZX363C6V8,6.47/7.14V,200mW,	1	SNA	
....4	PQ02	0501-002080	TR-SMALL SIGNAL;2SC2412K,NPN,200mW,SC-59	1	SA	
....4	Q409	0505-001165	FET-SILICON;Si3443CDV,P,-20V,+4.4A,65mo	1	SA	
....4	IC112	1103-000129	IC-EEPROM;24C02,2Kbit,256x8,SOP,8P,5x4mm	1	SA	
....4	IC112	1103-001410	IC-EEPROM;S-24CS08AFJ-TB-1GE,8Kbit,1Kx8,	1	SA	
....4	T0087	1203-006118	IC-POS.FIXED REG.;S-1172B18-U5T1G,SOT-8	1	SA	
....4	T0087	1203-006141	IC-POS.FIXED REG.;S-1172B33-U5T1G,SOT-8	1	SA	
....4	IC109	1205-003895	IC-LCD CONTROLLER;SE919LM- NT,QFP,64P,7x7	1	SA	
....4	DR1	2007-000043	R-CHIP;1Kohm,1%,1/10W,TP,1608	4	SA	
....4	CER02	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	2	SNA	
....4	AR30	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	20	SA	
....4	AVR51	2007-000083	R-CHIP;3Kohm,5%,1/10W,TP,1608	1	SNA	

5. Exploded View & Part List

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
....4	CER04	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	2	SA	
....4	MROP1	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	14	SA	
....4	AR108	2007-000097	R-CHIP;47Kohm,5%,1/10W,TP,1608	5	SA	
....4	ARR2	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	2	SA	
....4	ZR24	2007-000109	R-CHIP;1Mohm,5%,1/10W,TP,1608	1	SNA	
....4	KAR11	2007-000124	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	3	SNA	
....4	HR13	2007-000821	R-CHIP;390ohm,1%,1/10W,TP,1608	1	SNA	
....4	ZR10	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	3	SNA	
....4	R1	2007-002425	R-CHIP;1ohm,5%,1/10W,TP,1608	6	SNA	
....4	C134	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	1	SA	
....4	C409	2203-000292	C-CER,CHIP;0.01nF,5%,50V,C0G,1608	2	SA	
....4	C3	2203-000384	C-CER,CHIP;0.015nF,5%,50V,C0G,1608	1	SNA	
....4	ZC14	2203-000626	C-CER,CHIP;0.022nF,5%,50V,C0G,1608	1	SNA	
....4	6MC22	2203-000975	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-	6	SNA	
....4	DC108	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	24	SC	
....4	PC11	2203-006141	C-CER,CHIP;1000nF,10%,16V,X5R,1608	2	SNA	
....4	C125	2203-006361	C-CER,CHIP;10000nF,10%,10V,X5R,TP,2012	19	SC	
....4	X202	2801-003773	CRYSTAL-SMD;12MHz,30ppm,28-AAN,20pF,50oh	1	SA	
....4	L2011	3301-001145	BEAD-SMD;60ohm,4516,TP,70ohm/45MHz,82ohm	4	SNA	
....4	T0568	3301-001407	BEAD-SMD;30ohm,1608,300mA,TP,,,0.4ohm	2	SNA	
....4	AC510	3708-001150	CONNECTOR-FPC/FFC/PIC;30P,1mm,SMD-A,SN,Y	1	SA	
....4	HB01A	3711-005743	HEADER-BOARD TO CABLE;BOX,5P,1R,1.25mm,A	1	SA	
....4	T0077	BN41-01323A	PCB MAIN;PLUM B1630N,CEM-3,2,MP1.0,1.6,5	1	SNA	
....4		BN97-04136D	ASSY MICOM;E1920N,STZ,BN94-03250*	1	SNA	
.....5	IC115	1107-001580	IC-FLASH MEMORY;MX25L4005,4Mbit,512Kx8,S	1	SNA	
..2	M0006	BN96-12503C	ASSY SHIELD P-COVER;PLUM 18.5",SECC,T0.8	1	SNA	
...3		BN61-05973A	STUD-PEM;PLUM23",M4,D8,L20	2	SNA	
...3	M0107	BN63-06355C	SHIELD-COVER;PLUM 18.5",SECC,T0.8,18.5"	1	SNA	
...3	T0073	AA63-01141A	GASKET-EMI;42D5,Conductive Fabric,1.5mm,	2	SNA	
...3	M0131	BN63-00049A	GASKET;RB17AS,Conductive Fabric,1.5MM,10	3	SNA	
...3	M0114	BN61-02500A	HOLDER-WIRE;NYLON6.6,NATURAL	1	SNA	
..2	T0081	6001-002408	SCREW-MACHINE;BH,+,WT,M4,L12,ZPC(WHT),SW	2	SA	
..2	M0081	6003-000264	SCREW-TAPTYPE;PWH,+,-,B,M3,L6,ZPC(WHT),S	2	SA	
..2	M0214	BN96-02854W	ASSY CABLE P-FLAT CABLE;MCKINLEY,FLAT CA	1	SA	
0.1		BN91-05285A	ASSY SHIELD;E1920	1	SNA	
..2	CIS1	BN74-00021A	TAPE-FILAMENT;Filament tape,clear,#8915,	0.3	SNA	
0.1		BN92-05486D	ASSY LABEL;Cobalt, BLACK	1	SNA	
..2	CCM1	BN68-01570A	LABEL RATING;ALL,SS,PE,T0.05,90,45,Dark	1	SNA	
0.1		BN92-05547L	ASSY P/MATERIAL;S19S3,W/W	1	SNA	
..2	T0214	0203-001595	TAPE-OPP MASKING;OPP-2,0.075,75,800M,CLR	1.31	SNA	
..2		6902-000061	BAG AIR;LDPE,T0.2,W500,L1000,TRP,370.000	1	SNA	
..2	T0524	6902-000241	BAG PE;HDPE/NITRON,T0.5/T0.012,W600,L600	1	SNA	
..2		6902-000379	BAG AIR;LDPE,T0.2,W1000,L1800,TRP,1260.0	1	SNA	
..2		6902-000604	BAG WRAPPING;LDPE,T0.02,W500,L10000,TRP,	1.5	SNA	
..2		6902-000609	BAG ROLL;LDPE,T0.05,W2400,L1000,TRP,30.0	0.02	SNA	
..2		AA69-00243G	PAD-PLATE;CB SW-2,YEL,990,990,-,-,SP43J5	1	SNA	

5. Exploded View & Part List

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
..2	T0527	BH68-40364A	LABEL-SUMMARY;G52,G72,ART,100G,WHT,BL K,W	1	SNA	
..2		BH69-00457A	PACKING INNER-00;PAD;COMM,T3.0,1130,1180	1	SNA	
..2	T0527	BN68-00129A	LABEL SHIPPING-00;LABEL SHIPPING,ART-PAP	1	SNA	
..2		BN69-00139L	PALLET- PACKING;LN17HO,WOODEN,W:1030,D:10	1	SNA	
..2		BN69-00391Y	PAD-ANGLE;CB,T5,W2100,L50,YEL,403g	1	SNA	
..2		BN69-04618A	CUSHION-SET;COBALT18.5",SIMPLE,EPS,T0.01	1	SNA	
0.1		BN92-05761L	ASSY BOX;E1920NX,LS19CLYSB/XF	1	SNA	
..2	T0077	BH68-00329D	LABEL BAR CODE-02;NO CE,NO WT`Y,MPRII,LA	1	SNA	
..2		BH68-00651U	LABEL BOX-00;ALL MODEL,MOJO 90G,90,95,WH	1	SNA	
..2		BN68-02258K	LABEL-STICKER HIC;MODEL7,CHINA,MOJO,80G,	1	SNA	
..2		BN69-04812A	BOX-01,SET;Cobalt18.5"(SIMPLE),PAPER,SW,	1	SNA	
0.1	ACCE1	BN92-05916B	ASSY ACCESSORY;LS20CLYSB/XF	1	SNA	
..2	EC29	BN39-00244H	CBF SIGNAL-D-SUB TO D-SUB;D-sub cable,15	1	SA	
..2	SB04A	BN96-12816A	ASSY STAND P-BASE;COBALT 17~20,HIPS HB,B	1	SA	
...3	T0524	6902-000109	BAG PE;HDPE,T0.015,W350,L430,TRP,28,2,4.	1	SNA	
...3	CIS4	BN61-01717A	HOLDER-STAND;BIZET,NI PLT,CH,+,M4,L11(5)	1	SNA	
...3		BN63-06716A	COVER-STAND BASE;COBALT 17~20,HIPS,HB,BK	1	SNA	
...3		BN68-02691A	MANUAL FLYER-STAND;COBALT,Mojo 80g,148,2	1	SNA	
...3		BN68-02822G	LABEL-STICKER;W/W,ART PAPER,T0.05,50,10,	1	SNA	
...3	AR011	BN73-00077A	RUBBER FOOT;MATISSE,BUMPON,#13.5,T2.0 ,60	6	SNA	
..2	SB01A	BN96-12853A	ASSY STAND P-BODY;COBALT,HIPS,BK23,ETCH	1	SA	
...3	W392	6003-000282	SCREW-TAPTYPE;BH,+, -,B,M3,L8,ZPC(BLK),SW	2	SA	
...3	T0524	6902-000023	BAG PE;LDPE,T0.08,W150,L120,TRP,1.650g	1	SNA	
...3		BN61-06067A	STAND-BAR;COBALT 21.5,HIPS,BK23	1	SNA	
...4		BN61-06068A	STAND-BAR IN;COBALT,HIPS,BK23,IN	1	SNA	
...3		BN61-06334A	BRACKET-PLATE;COBALT,SECC,1.0,SIMPLE	1	SNA	
...3		BN68-02822J	LABEL-STICKER;W/W,ART PAPER,T0.05,50,10,	1	SNA	
..2	ACCE1	BN96-13553Y	ASSY ACCESSORY;LS17CLASB/XF	1	SA	
...3	T0268	3903-000455	CBF-POWER CORD;DT,CN,IP3/Y(A),IEC320 C13	1	SA	
...3	T0524	6902-000110	BAG PE;LDPE,T0.05,W250,L400,TRP,28,2,9.2	1	SNA	
...3	T0527	AA68-00764A	LABEL-PASSING;SAMSUNG ALL,ART PAPER,CLR,	1	SNA	
...3	T0527	BN68-00513A	LABEL-E,PASS;ALL MODEL,YUPO(110G),50X15,	1	SNA	
...3		BN68-01118D	MANUAL-TCO 5.0 CARD;COMM,W/W,Mojo 80g,21	1	SNA	
...3		BN68-01789A	MANUAL FLYER-WARRANTY CARD;Chinese,Art 1	1	SNA	
...3		BN68-02528A	MANUAL FLYER-CHINA MANUAL;Cobalt,SyncMas	1	SNA	
0.1		BN90-02693A	ASSY COVER FRONT;E1920,BLACK	1	SNA	
..2	F001A	BN96-13091A	ASSY COVER P-FRONT;Cobalt 18.5W,ABS,HB,B	1	SA	
...3	F001	BN63-06843A	COVER-FRONT;Cobalt 18.5W,ABS,HB,BK23,SIM	1	SNA	
...3	AL093	BN67-00281A	LENS-LED;Cobalt Project,PC CLEAR,TP26	1	SNA	
...3		BN68-02382B	LABEL-TCO5.0,ENERGY- STAR;TCO5.0,ENERGY-S	1	SNA	
...3	M0007	BN64-01309A	KNOB-FUNCTION;Cobalt Project,ABS,BK23	1	SNA	

5. Exploded View & Part List

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
....3	FB01A	BN96-13682E	ASSY BOARD P-FUNCTION;Cobalt,FUNCTION,20	1	SA	
....4		BN94-03497D	ASSY PCB FUNCTION-BN96- 13682E;COBALT,BN9	1	SNA	
.....5		0202-001463	SOLDER-WIRE;LFC2-W3.0,-,D3,99.79Sn/0.2Cu	1.814	SNA	
.....5		0202-001608	SOLDER-WIRE FLUX;LFC7-107,D0.8,99.3Sn/0.	0.003	SNA	
.....5		0204-002420	SOLVENT;1M-1000,C3H7OH,96	3.47	SNA	
.....5		0204-002607	FLUX;DF-234U,13%,14KG,Gravity 0.82	2.259	SNA	
.....5	EC13	BN39-01298D	LEAD CONNECTOR;Cobalt,UL 1061 #28,UL/CSA	1	SA	
.....5	T0174	BN97-04306A	ASSY SMD;COBALT, FUNCTION	1	SNA	
.....6		0202-001477	SOLDER-CREAM;LST309- M,D20~45um,96.5Sn/3A	0.462	SNA	
.....6	L0405	0601-001896	LED;SMD,BLUE,1.6x0.8x0.4mm,470,1.6x0.8x0	1	SA	
.....6	AHR40	2007-000088	R-CHIP;7.5Kohm,5%,1/10W,TP,1608	2	SNA	
.....6	KAR11	2007-000124	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	2	SNA	
.....6	T0313	3404-001379	SWITCH-TACT;12V,50mA,250gf,4.9x4.9x1.5mm	6	SA	
.....6	HB01A	3711-005743	HEADER-BOARD TO CABLE;BOX,5P,1R,1.25mm,A	1	SA	
.....6		BN41-01400B	PCB SUB-FUNCTION;Cobalt(all),FR-4,2,1.1,	1	SNA	

1. Precautions

1-1. Safety Precautions

Follow these safety, servicing and ESD precautions to prevent damage and to protect against potential hazards such as electrical shock.

1-1-1. Warnings

1. For continued safety, do not attempt to modify the circuit board.
2. Disconnect the AC power and DC power jack before servicing.

1-1-2. Servicing the LCD Monitor

1. When servicing the LCD Monitor, Disconnect the AC line cord from the AC outlet.
2. It is essential that service technicians have an accurate voltage meter available at all times. Check the calibration of this meter periodically.

1-1-3. Fire and Shock Hazard

Before returning the monitor to the user, perform the following safety checks:

1. Inspect each lead dress to make certain that the leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the monitor.
2. Inspect all protective devices such as nonmetallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistorcapacitor networks, mechanical insulators, etc.
3. Leakage Current Hot Check (Figure 1-1):

WARNING : Do not use an isolation transformer during this test.

Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI C101.1, Leakage Current for Appliances), and Underwriters Laboratories (UL Publication UL1410, 59.7).

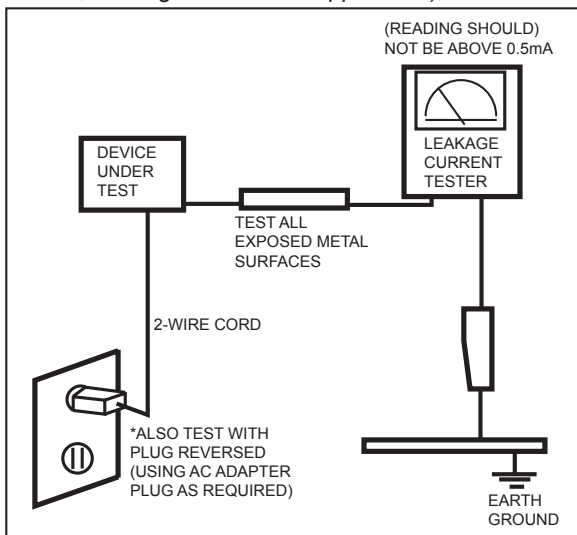


Figure 1-1. Leakage Current Test Circuit

4. With the unit completely reassembled, plug the AC line cord directly into a 120V AC outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, conduit, etc.) and all exposed metal parts, including: metal cabinets, screwheads and control shafts. The current measured should not exceed 0.5 milliamp. Reverse the power-plug prongs in the AC outlet and repeat the test.

1-1-4. Product Safety Notices

Some electrical and mechanical parts have special safetyrelated characteristics which are often not evident from visual inspection. The protection they give may not be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by ⚠ on schematics and parts lists. A substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

1-2. Servicing Precautions

WARNING: An electrolytic capacitor installed with the wrong polarity might explode.

Caution: Before servicing units covered by this service manual, read and follow the Safety Precautions section of this manual.

Note: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions.

1-2-1 General Servicing Precautions

1. Always unplug the unit's AC power cord from the AC power source and disconnect the DC Power Jack before attempting to:
(a) remove or reinstall any component or assembly, (b) disconnect PCB plugs or connectors, (c) connect a test component in parallel with an electrolytic capacitor.
2. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
3. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the area around the serviced part has not been damaged.
4. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).
5. Insulation Checking Procedure: Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500 V) to the blades of the AC plug.
The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.
6. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

1-3. Static Electricity Precautions

Some semiconductor (solid state) devices can be easily damaged by static electricity. Such components are commonly called Electrostatically Sensitive Devices (ESD). Examples of typical ESD are integrated circuits and some field-effect transistors. The following techniques will reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. To avoid a shock hazard, be sure to remove the wrist strap before applying power to the monitor.
2. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of an electrostatic charge.
3. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESDs.
4. Use only a grounded-tip soldering iron to solder or desolder ESDs.
5. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESDs.
6. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
7. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.
Caution: Be sure no power is applied to the chassis or circuit and observe all other safety precautions.
8. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting your foot from a carpeted floor can generate enough static electricity to damage an ESD.

1-4. Installation Precautions

1. For safety reasons, more than two people are required for carrying the product.
2. Keep the power cord away from any heat emitting devices, as a melted covering may cause fire or electric shock.
3. Do not place the product in areas with poor ventilation such as a bookshelf or closet. The increased internal temperature may cause fire.
4. Bend the external antenna cable when connecting it to the product. This is a measure to protect it from being exposed to moisture. Otherwise, it may cause a fire or electric shock.
5. Make sure to turn the power off and unplug the power cord from the outlet before repositioning the product. Also check the antenna cable or the external connectors if they are fully unplugged. Damage to the cord may cause fire or electric shock.
6. Keep the antenna far away from any high-voltage cables and install it firmly. Contact with the highvoltage cable or the antenna falling over may cause fire or electric shock.
7. When installing the product, leave enough space (10cm) between the product and the wall for ventilation purposes. A rise in temperature within the product may cause fire.

Memo

2. Product specifications

2-1. Feature & Specifications

Feature			
Model	E1720NR / E1720NRX	E1920N / E1920NX	E1920NR / E1920NRX
Brightness(Typical)	250 cd/m2		
Response Time(Typical)	5ms		
Contrast Ratio(Typical)	DC 50000:1 (Typ.500:1)		
Viewing Angle (Horizontal/Vertical)	170°/160° (CR>10)		
Stand by Power(DPMS)	<0.3W		
Special Features	MagicBright3, MagicEco, MagicAngle, Off timer, Image Size, Color Effect,Customized key, Windows Vista Basic		

Specifications			
Model	E1720NR / E1720NRX	E1920N / E1920NX	E1920NR / E1920NRX
LCD Panel	TFT-LCD panel, RGB vertical stripe, normally white transmissive		
	17"Normal 0.264 mm(H) x 0.264 mm(V) pixel pitch	18.5"Wide 0.3 mm(H) x 0.3 mm(V) pixel pitch	19"Normal 0.294 mm(H) x 0.294 mm(V) pixel pitch
Scanning Frequency	Horizontal : 30 ~ 81 kHz Vertical : 56 ~ 75 Hz		
Color Supported	16.7M		
Resolution	1280 x 1024	1360 x 768	1280 x 1024
Input Signal	17"Normal Analog	18.5" Analog	19"Normal Analog
Input Sync. Signal	Separate H/V sync, Composite H/V, Sync-on-Green Level:TTL level		
Maximum Pixel Clock	135 MHz	89 MHz	135 MHz
Active Display (Horizontal/Vertical)	337.92(H) x 270.336(V)	409.8(H) x 230.4(V)	376.32(H) x 301.056(V)
AC power voltage & Frequency	AC 110~130V, 60Hz & AC 200~240V, 50Hz		
Power consumption	Less than 22W	Less than 22W	Less than 24W
Dimension Set (W x H x D)	373.5 x 395.9 x 179.8mm	443.4 x 355 x 179.8mm	417.2 x 426.4 x 179.8mm
Weight	3.5Kg	3.45Kg	4.2Kg
Environmental Considerations	Operating Temperature: 10°C ~ 40°C(50°F ~ 104°F) Operating Humidity : 10% ~ 80% Operating Temperature: -25°C ~ 45°C(-13°F ~ 113°F) Operating Humidity: 5% ~ 90%		
Note: Designs and specifications are subject to change without prior notice.			

2. Product specifications

Feature			
Model	E1920NW / E1920NWX	E2020N / E2020NX	E2220N / E2220NX
Brightness(Typical)	300 cd/m2	250 cd/m2	300 cd/m2
Response Time(Typical)	5ms		
Contrast Ratio(Typical)	DC 70000:1 (Typ. 1000:1)	DC 50000:1 (Typ. 1000:1)	DC 70000:1 (Typ. 1000:1)
Viewing Angle (Horizontal/Vertical)	160°/160° (CR>10)	170°/160° (CR>10)	
Stand by Power(DPMS)	<0.3W		
Special Features	MagicBright3, MagicEco, MagicAngle, Off timer, Image Size, Color Effect,Customized key, Windows Vista Basic		

Specifications			
Model	E1920NW / E1920NWX	E2020N / E2020NX	E2220N / E2220NX
LCD Panel	TFT-LCD panel, RGB vertical stripe, normally white transmissive		
	19" Wide 0.2835 mm(H) x 0.2835 mm(V) pixel pitch	20" Wide 0.2768 mm(H) x 0.2768 mm(V) pixel pitch	21.5" Wide 0.24825 mm(H) x 0.24825 mm(V) pixel pitch
Scanning Frequency	Horizontal : 30 ~ 81 kHz Vertical : 56 ~ 75 Hz		
Color Supported	16.7M		
Resolution	1440 x 900	1600 x 900	1920 x 1080
Input Signal	19" Analog	20" Analog	21.5" Analog
Input Sync. Signal	Separate H/V sync, Composite H/V, Sync-on-Green Level : TTL level		
Maximum Pixel Clock	137 MHz	150 MHz	162 MHz
Active Display (Horizontal/Vertical)	408.24 mm x 255.15 mm	442.8 mm x 249.075 mm	476.64 mm x 268.11 mm
AC power voltage & Frequency	AC 110~130V, 60Hz & AC 200~240V, 50Hz		
Power consumption	Less than 39W	Less than 28W	Less than 50W
Dimension Set (W x H x D)	443.0 x 375.0 x 179.8mm	475.1 x 368.95 x 179.8mm	513.2 x 388.5 x 179.8mm
Weight	3.6Kg	3.95Kg	4.1Kg
Environmental Considerations	Operating Temperature: 10°C ~ 40°C(50°F ~ 104°F) Operating Humidity : 10% ~ 80% Operating Temperature: -25°C ~ 45°C(-13°F ~ 113°F) Operating Humidity: 5% ~ 90%		
Note: Designs and specifications are subject to change without prior notice.			

Feature	
Model	E2220NW
Brightness(Typical)	300 cd/m2
Response Time(Typical)	5ms
Contrast Ratio(Typical)	DC 70000:1 (Typ. 1000:1)
Viewing Angle (Horizontal/Vertical)	170°/160° (CR>10)
Stand by Power(DPMS)	<0.3W
Special Features	MagicBright3, MagicEco, MagicAngle, Off timer, Image Size, Color Effect,Customized key, Windows Vista Basic

Specifications	
Model	E2220NW
LCD Panel	TFT-LCD panel, RGB vertical stripe, normally white transmissive
	22" Wide, 0.282 mm(H) x 0.282 mm(V) pixel pitch
Scanning Frequency	Horizontal : 30 ~ 81 kHz Vertical : 56 ~ 75 Hz
Color Supported	16.7M
Resolution	1680 x 1050
Input Signal	22" Analog
Input Sync. Signal	Separate H/V sync, Composite H/V, Sync-on-Green Level : TTL level
Maximum Pixel Clock	146 MHz
Active Display (Horizontal/Vertical)	473.76 mm x 296.1 mm
AC power voltage & Frequency	AC 110~130V, 60Hz & AC 200~240V, 50Hz
Power consumption	Less than 50W
Dimension Set (W x H x D)	510.7 x 421.35 x 179.8mm
Weight	4.55Kg
Environmental Considerations	Operating Temperature: 10°C ~ 40°C(50°F ~ 104°F) Operating Humidity : 10% ~ 80% Operating Temperature: -25°C ~ 45°C(-13°F ~ 113°F) Operating Humidity: 5% ~ 90%
Note: Designs and specifications are subject to change without prior notice.	

2-2. Spec Comparison to the Old Models

Model	E1720NR/ E1720NRX/ E1920N/ E1920NX/ E1920NR/ E1920NRX/ E1920NW/ E1920NWX/ E2020N/ E2020NX/ E2220N/ E2220NX/ E2220NW	743A/943SN/943N/943NW 2043SN/2243SN/2243NW
Design		
Resolution	1280 x 1024 (E1720NR/E1920NR) 1360 x 768 (E1920N) 1440 x 900 (E1920NW) 1600 x 900 (E2020N) 1920 x 1080 (E2220N) 1680 x 1050 (E2220NW)	1280 x 1024 (743A/943N) 1360 x 768 (943SN) 1440 x 900 (943NW) 1600 x 900 (2043SN) 1920 x 1080 (2243SN) 1680 x 1050 (2243NW)
Input	Analog	Analog
Response Time	5ms	5ms
Viewing Angle	160°/160° (CR>10) (E1920NW) 170° / 160° (CR>10) (E1720NR/E1920N/E1920NR/ E2020N/E2220N/E2220NW)	160°/160° (CR>10) (943NW) 170° / 160° (CR>10) (743A/943SN/943N 2043SN/2243SN/2243NW)
Brightness	250 m ² (E1720NR/E1920N/E1920NR/E2020N) 300 m ² (E1920NW/E2220N/E2220NW)	250 m ² (743A/943SN/943N/2043SN) 300 m ² (943NW/2243SN/2243NW)
Contrast	50,000:1(DC) (E1720NR/E1920N/E1920NR/E2020N) 70,000:1(DC) (E1920NW/E2220N/E2220NW)	50,000:1(DC) (743A/943SN/943N/2043SN) 70,000:1(DC) (943NW/2243SN/2243NW)
MagicBright	5 Step	7 Step

Model	E1720NR/ E1720NRX/ E1920N/ E1920NX/ E1920NR/ E1920NRX/ E1920NW/ E1920NWX/ E2020N/ E2020NX/ E2220N/ E2220NX/ E2220NW	743A/943SN/943N/943NW 2043SN/2243SN/2243NW
Feature	MagicBright3 MagicEco MagicAngle Off timer Image Size Color Effect	MagicBright3 Off timer Image Size Color Effect

***Color Effect**

- Grey scale: Images are displayed in a grey tone on the screen.
- Green: Images are displayed in a green tone on the screen.
- Aqua: Images are displayed in a blue tone on the screen.
- Sepia: Images are displayed in a brown tone on the screen.

Image Size : If the resolution is not wide resolution, this option allows the screen size to be selected as normal or wide.

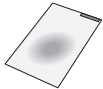
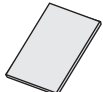
***MagicAngle**

- Lean Back Mode1: Select when viewing from a slightly lower angle.
- Lean Back Mode2: Select when viewing from the bottom.
- Standing Mode: Select when viewing from the top.
- Side Mode: Select when viewing from the left or right.
- Custom: When <Custom> is selected, settings for <Lean Back Mode 1> is applied by default.
User can set suitable picture quality as needed.

***MagicEco**

- 100%: the power consumption is 100% of Default Setting.
- 75%: the power consumption is 75% of Default Setting.
- 50%: the power consumption is 50% of Default Setting.

2-3. Accessories

Product	Description	Ccde. No	Remark
	Quick Setup Guide	BN68-02508A	Samsung Electronics Service center
	Warranty Card (Not available in all locations)	BN68-00226R	
	User's Guide, Monitor Driver, Natural Color Pro Software	BN59-00990A	
	D-sub Cable 1,500mm(1.5M)	BN39-00244H	
	Power Cord 1,830mm(1.8M)	3903-000452	
	Cleaning Cloth 160mm x 120mm (option for high-glossy Models)	BN63-02368B	

4 故障排除

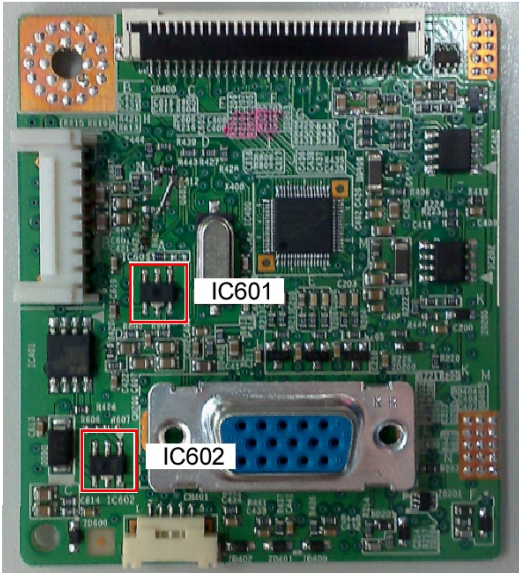
4-1. 故障排除

1. 在进行故障排除之前，按如下方式设置制式模式：

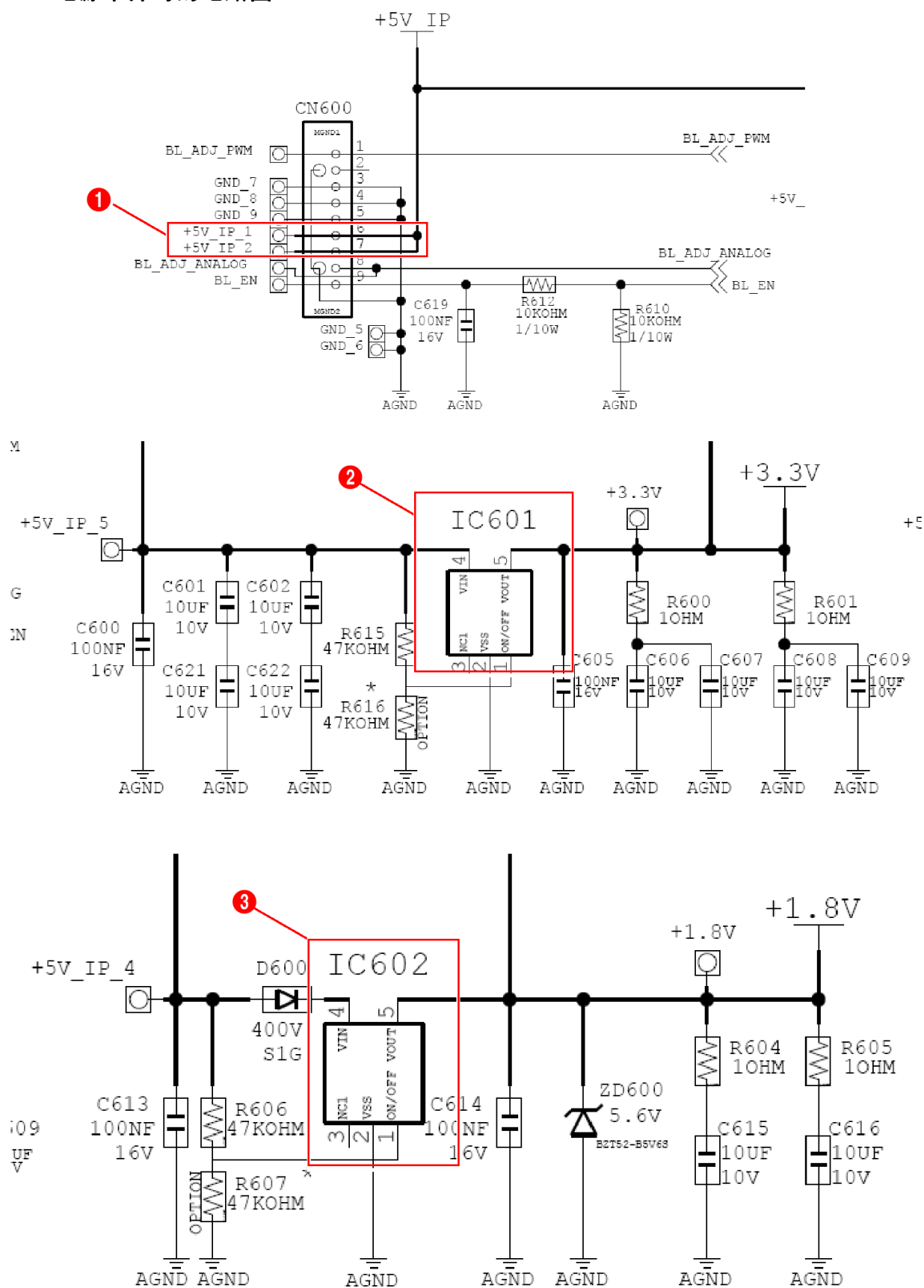
E1720NR/E1920NR	E1920N	E1920NW
分辨率：1280×1024 竖直频率：60 Hz 水平频率：64 kHz	分辨率：1360×768 竖直频率：60 Hz 水平频率：47.7 kHz	分辨率：1440×900 竖直频率：60 Hz 水平频率：55.9 kHz
E2020N	E2220N	E2220NW
分辨率：1600×900 竖直频率：60 Hz 水平频率：64 kHz	分辨率：1920×1080 竖直频率：60 Hz 水平频率：67.5 kHz	分辨率：1680×1050 竖直频率：60 Hz 水平频率：64.7kHz

2. 如果没有图像出现，确保正确连接了电源线。
3. 检查以下电路：
- 没有光栅出现：功能印刷电路板组件、主印刷电路板组件、I/P 印刷电路板组件
 - 5V 形成，但没有画面：主印刷电路板组件
 - 5V 没有形成：I/P 印刷电路板组件
4. 按下菜单键并按住“（确认/来源）”键超出 5 秒，显示器会自动进入工厂模式。

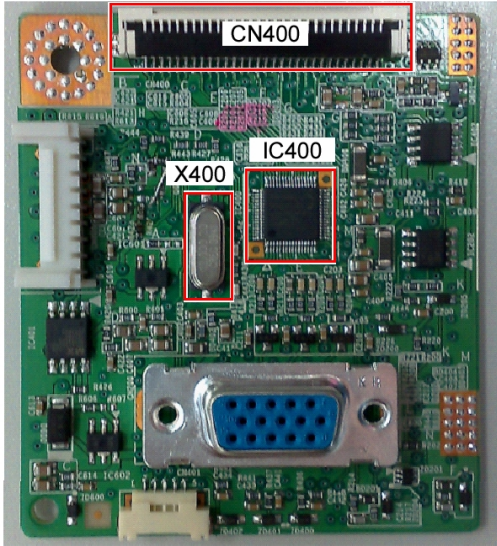
4-2 电源未打开

征兆	-连接电源后打开电源按钮时，显示器前部的 LED 指示灯不运行。
主要检查点	-连接电源线后打开电源按钮，显示器前部的 LED 灯不运行。 -检查 IP 板保险丝和 IP 板输出功率。 -检查 IP 板和显示器内部主板的连接情况。 -检查主板电源部分，同时检查其它输出终端是否有任何输出异常。
诊断	 检查功能组件的连接状况 否 → 更换 IP 板 是 → IC601 连接器在管脚 3、4、5 电压为 0V 时管脚 6、7 所测电压是否为 DC5V? 否 → 检查 IC601 上的相关电路 是 → IC601 管脚 4 电压为 DC5V 时管脚 5 所测电压是否为 DC3.3V? 否 → 检查 IC602 上的相关电路 是 → IC602 管脚 4 电压为 DC5V 时管脚 5 所测电压是否为 DC1.8V? 否 → 检查并更换 IP 板
注意	在 IP 板工作之前确保电源断开。

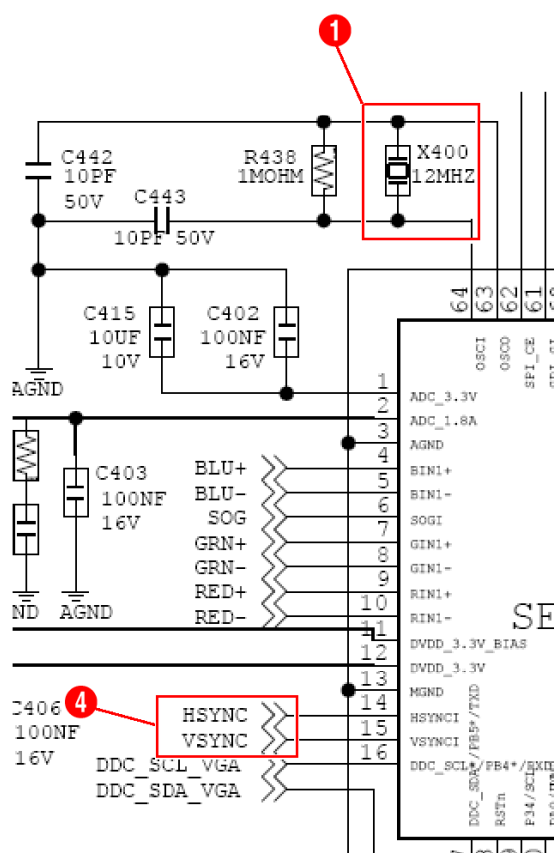
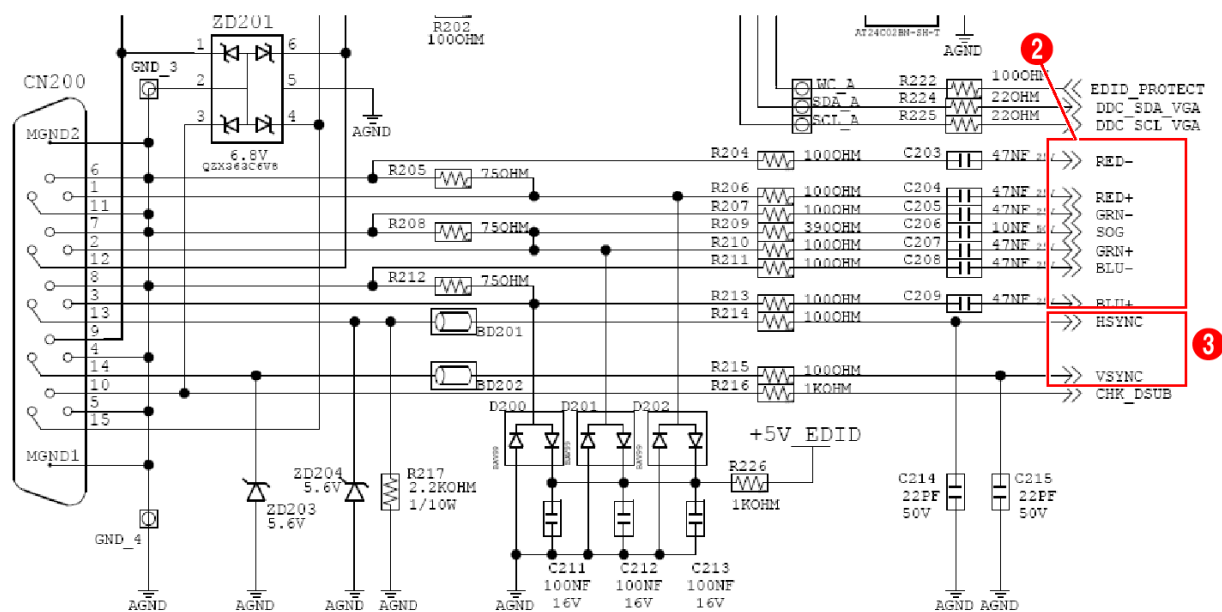
4-2-1 电源未开时的电路图



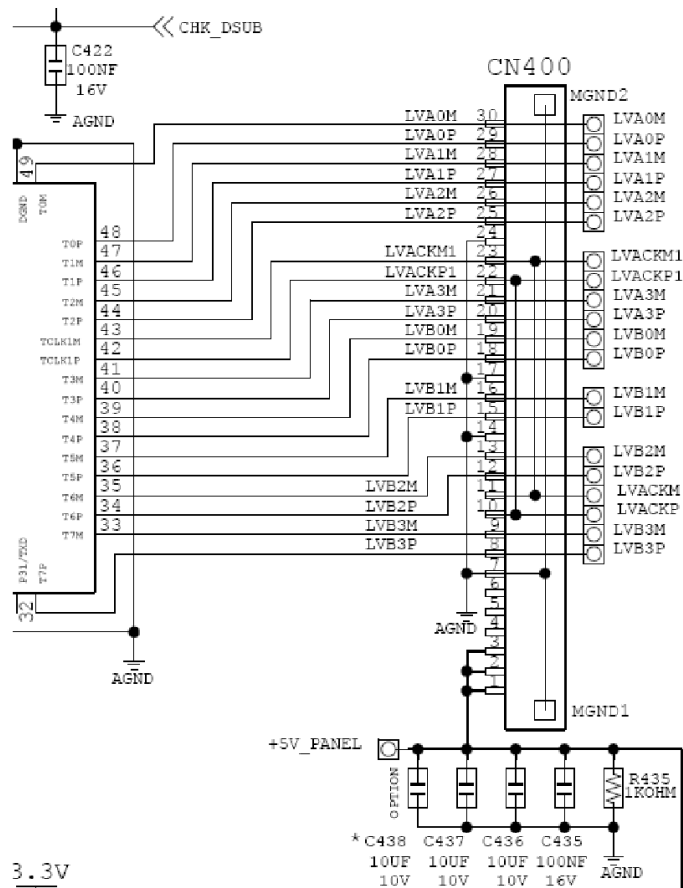
4-3. 当显示器黑屏时

征兆	-尽管 LED 电源打开，但连接 VGA 接线时，屏幕仍为黑屏。
主要检查点	-即使 LED 电源打开，连接 VGA 接线时，屏幕仍为黑屏 -检查 D-SUB 接线的连接情况。 -检查 LVDS 接线是否正确连接到面板上。 -检查面板灯连接器是否正确连接到了 IP 板上。
诊断	 检查信号接线及其连接 是 检查 X400 震荡是否正常？ 否 → 如果需要检查并更换与 X400 相关的电路。 是 在 R204、R207、和 R211 上是否出现了 RGB 输入？ 否 → 检查 R204、R207、和 R211 的输入终端 是 检查 IC400 的管脚 14、15 上是否出现了水平同步和竖直同步的波形？ 否 → 检查 IC400 和相关电路 是 CN400 的管脚 8 到管脚 30 是否出现了输出信号？ 否 → 检查 CN400 和相关电路 是 在 CN400 的管脚 1、2、3 上的电压是否为 DC5V？ 否 → 检查 +5V 板信号和 BL_EN 信号 是 检查并更换显示板
注意	在 IP 板工作之前确保电源断开。

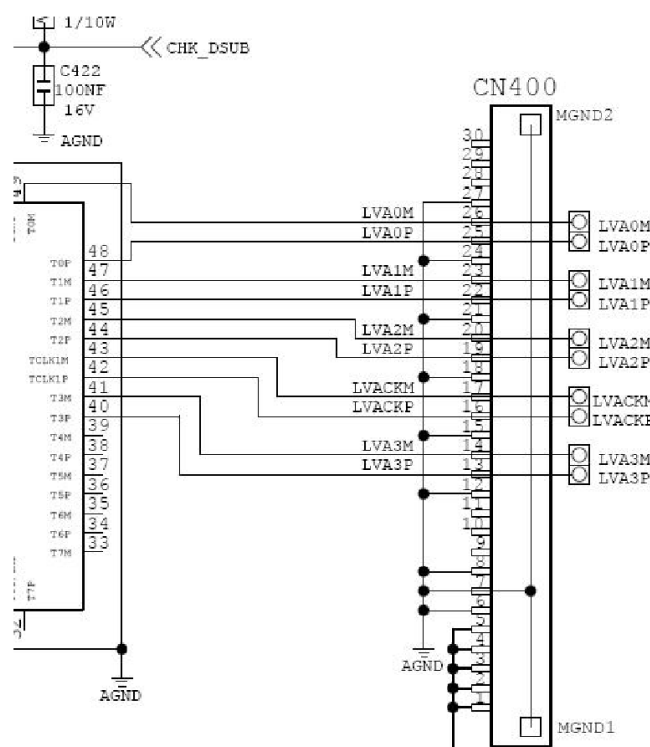
4-3-1. 显示器上出现黑屏时



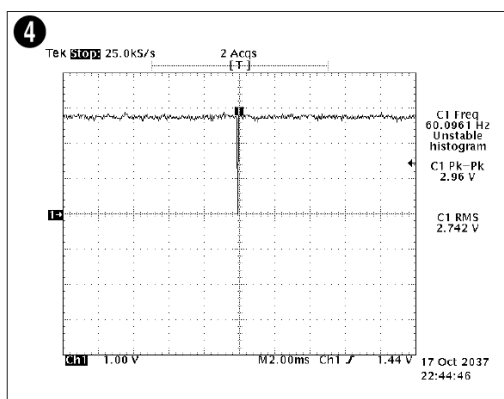
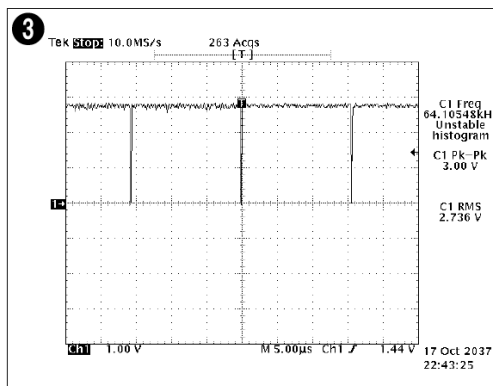
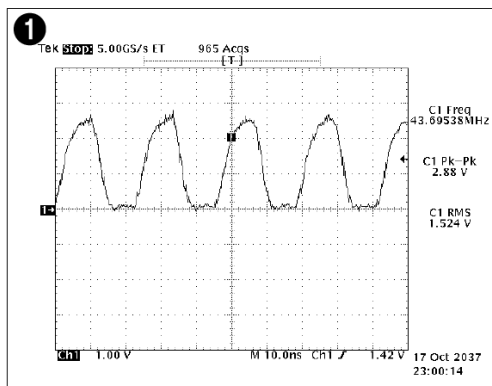
E1720NR / E1720NRX / E1920NR / E1920NRX / E1920NW / E1920NW~~X~~ / E2020N / E2020NX / E2220N / E2220NX / E2220NW



E1920N / E1920NX



4-3-2. 显示器上无显示时的波形图



4-4.故障和校正措施

故障图片	征兆和校正措施	备注
	征兆：打开显示器时，无论是否有信号，连续显示全白图案。 原因：由于 LVDS 接线发生故障或错误连接，在仅供应灯电源并且未向面板输入视频信号时会发生此故障。 校正措施：更换或重新正确连接 LVDS 接线，以能够将视频信号输入到面板中。	*全白图案是TN面板的一个特点，可在未输入视频信号时显示。

4-5. 调节

4-5-1. 维修调节条件

1. 维修调节前的注意事项

- 1) 检查维修调节的设备是否操作正常。
- 2) 为了安全在足够大的空间处拆卸显示器。
- 3) 在拆卸前准备一块软垫。

2. 进入维修模式

进入：[菜单] → [亮度 0] → [对比度 0] → [按下确认键五（5）秒]

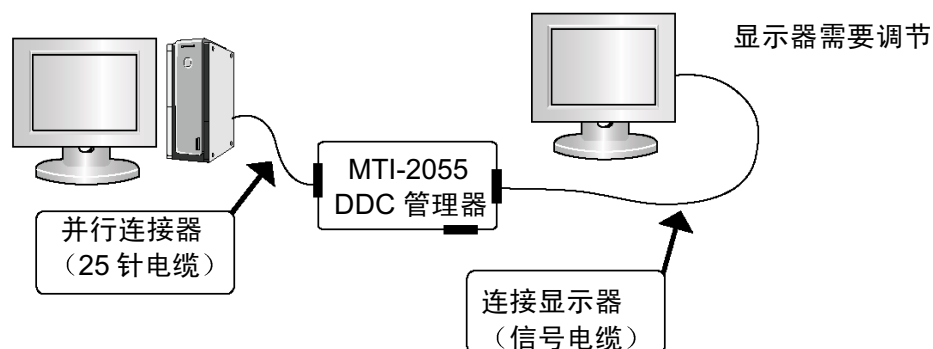
退出：[关闭电源] → [开启电源]

3. 更换板后的基本维修项目

- 1) 检查 PC 颜色调节状态。
- 2) DDC 输入（模拟和数字输入）
- 3) 检查此型号是否有合适的 MCU 代码输入。
- 4) 进入维修模式后硬关机并进行预设。

4. DDC EDIT 数据输入

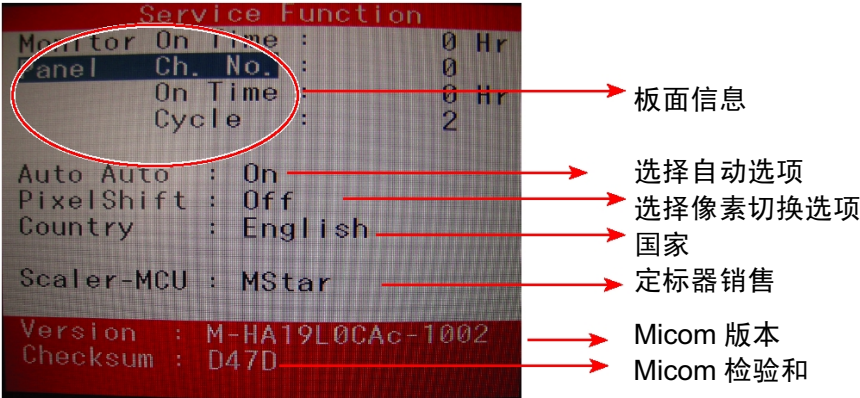
- 1) 在 AD 板代码更新时使用。
- 2) 通过三星电子质量控制部门下载适于该机型的 WinDDC 程序、DDC 输入程序和 DDC 文件。
安装以下装置并输入数据，如图所示。



4-5-2.维修功能规格

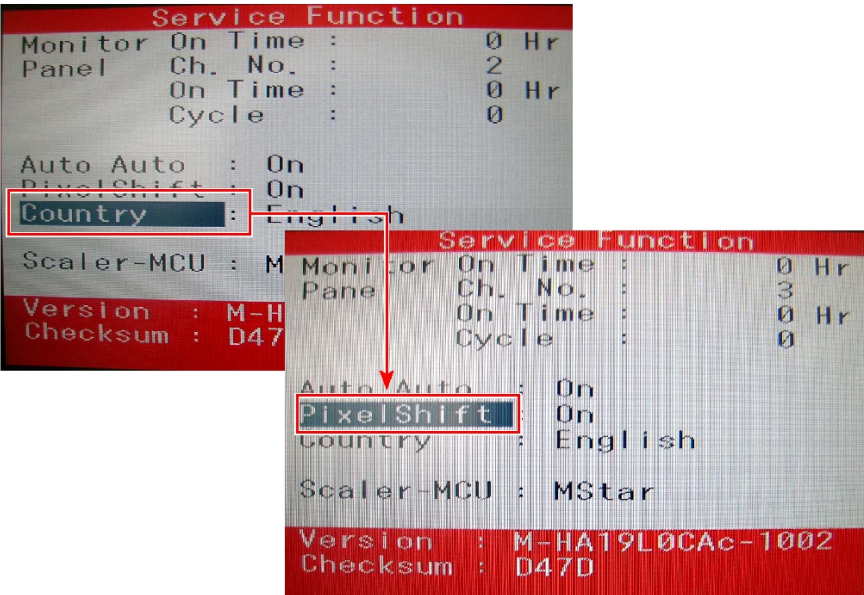
■ 检查代码版本

- 1.进入 SVC 模式后检查 MCU 代码版本和检验和。
- 2.进入 SVC 模式
 - 设置亮度和对比度到 0。
 - 按下确定键和来源键五（5）秒。
 - 出现在屏显示调节 SVC 功能。
 - 如要退出在屏显示调节功能，你必须先要关闭电源。
- 3.安全模式
 - 当输入信号高于产品所限的频率后，安全模式会给用户提供些时间（1 分钟）来改变视频卡的设置到被应许的模式设置下。

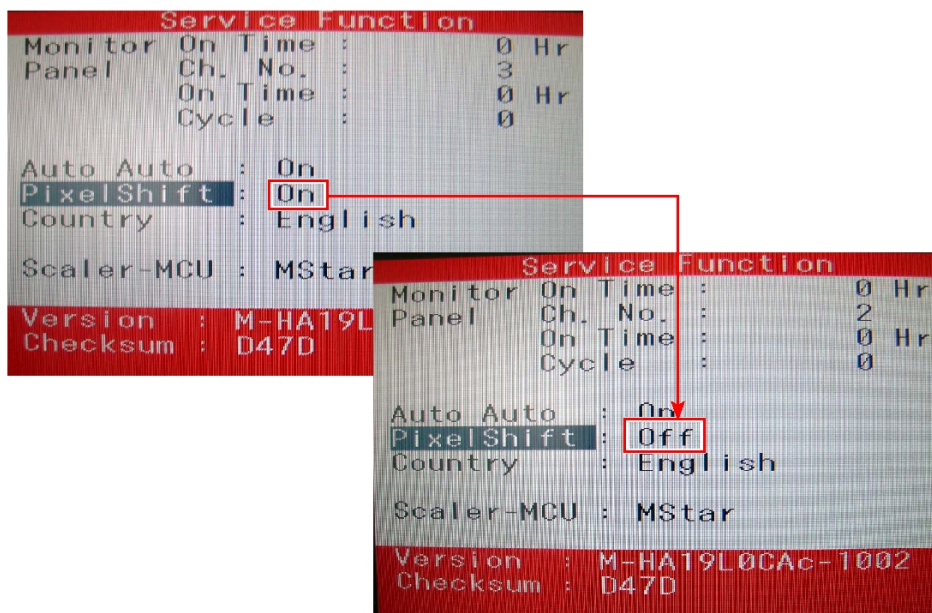


■ 维修模式（移动）

- 1. 按下-按钮，选择菜单。



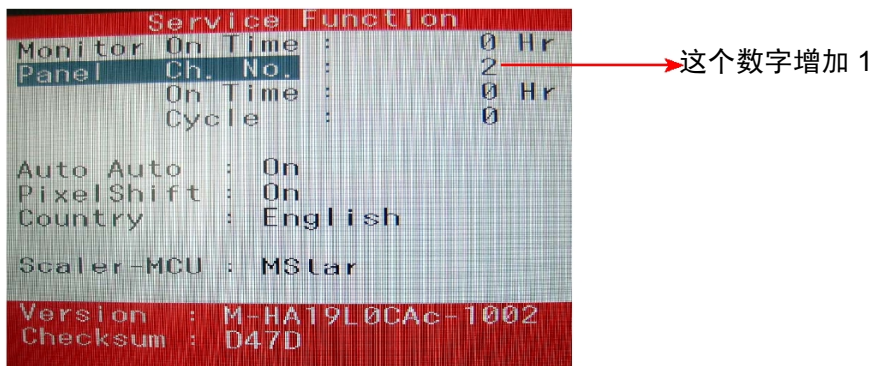
2. 按下-号按钮，更改设置到开或关。



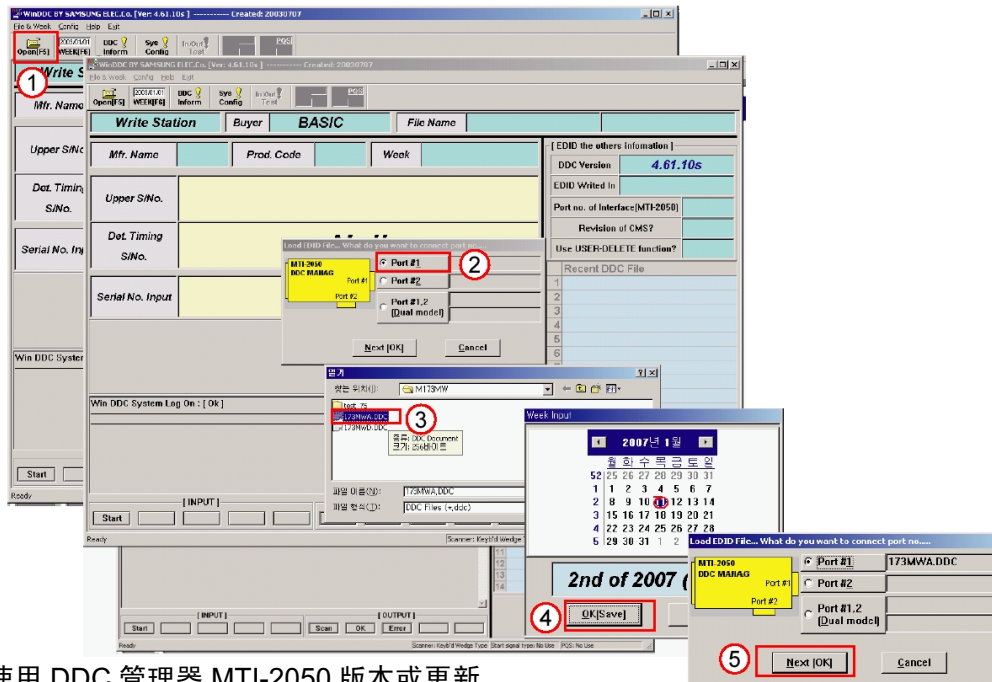
■ 更换面板时

更换面板后，选择面板项目并按下菜单按钮五（5）秒。

板面 Ch.No 将会增加 1，且时间信息会更改到 0。

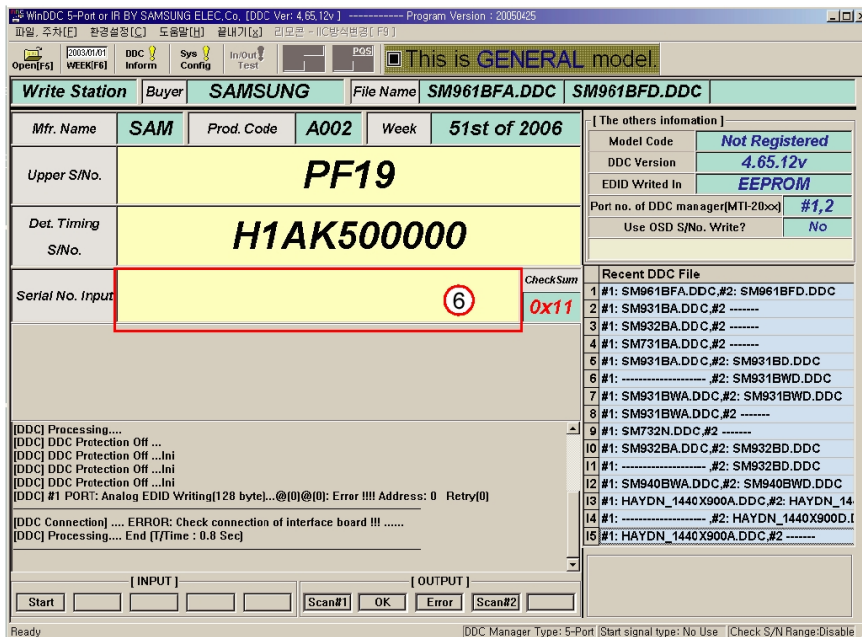


■ 输入 DDC 数据



使用 DDC 管理器 MTI-2050 版本或更新

1. 点击打开[F5]图标。
2. 选择一个端口。
3. 打开 DDC 文件。
4. 选择一个日期并点击确认[保存]按钮。
5. 点击下一步[确定]按钮。



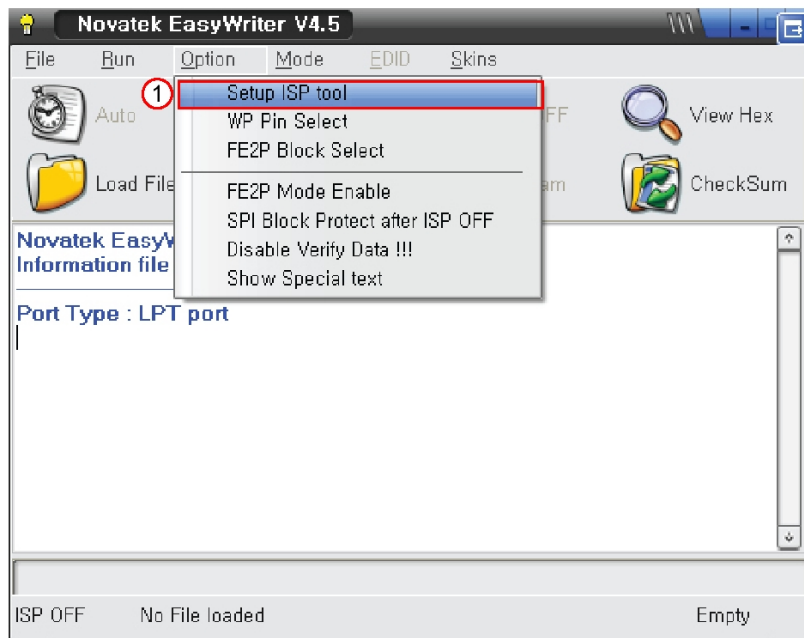
6. 输入系列编号并按下确认键。

※输入模拟数据后，再输入数字数据，重复此过程2到5次。

■输入 MCU 数据

1) 打开“Easywriter”后检查如下选项。

-选项：设置 ISP 工具

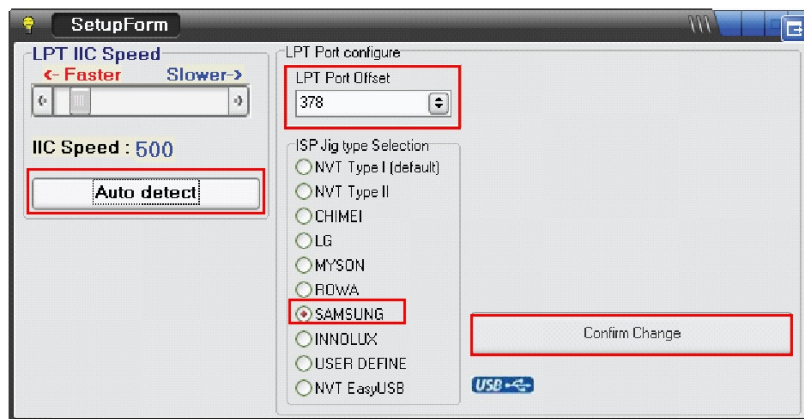


- LPT端口偏移：378

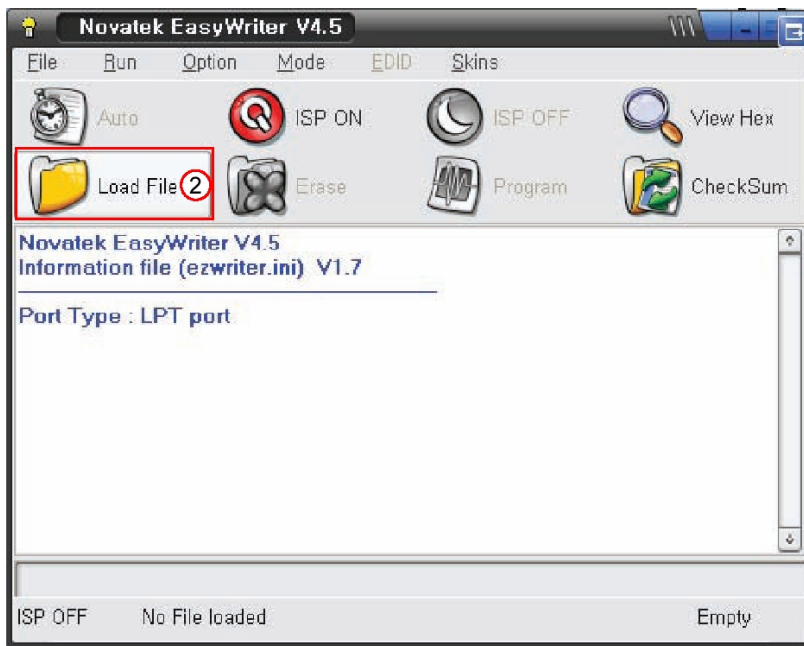
- ISP Jig型号选择：三星

- 自动检测

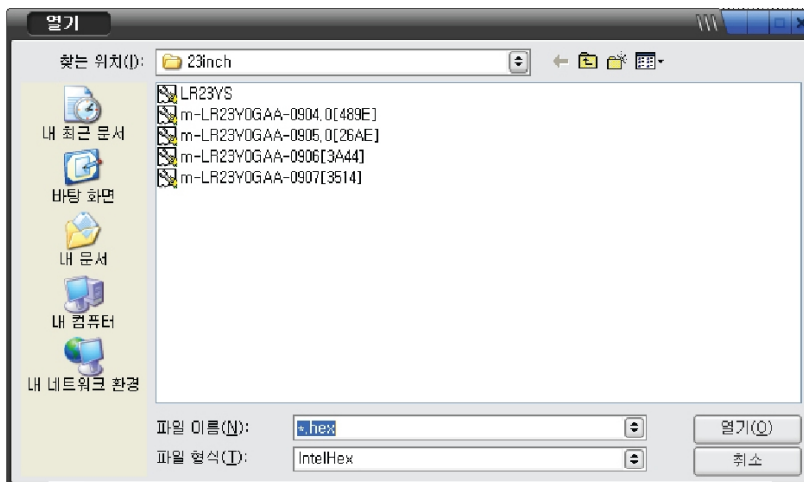
- 确认更改



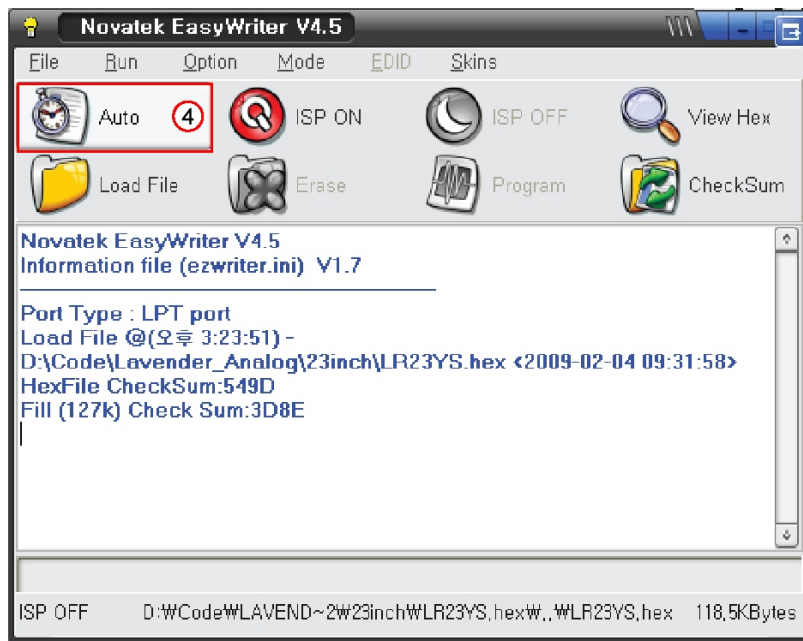
2) 点击下载文件按钮。



3) 选择 MCU 代码文件，然后点击打开【O】按钮。



4) 点击自动按钮。



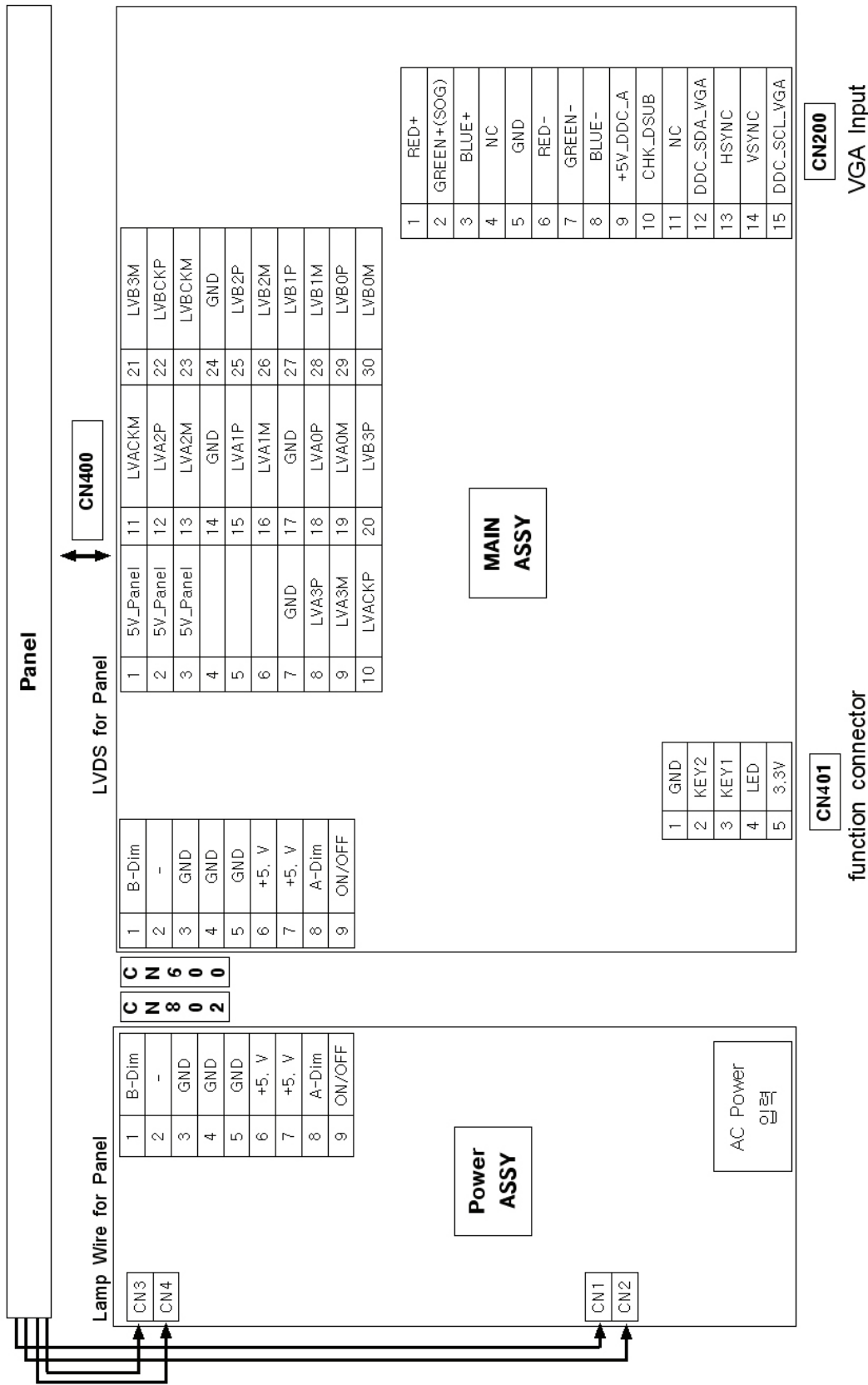
5) 当进程和检验完成后，硬关机并再次开启。

备忘录

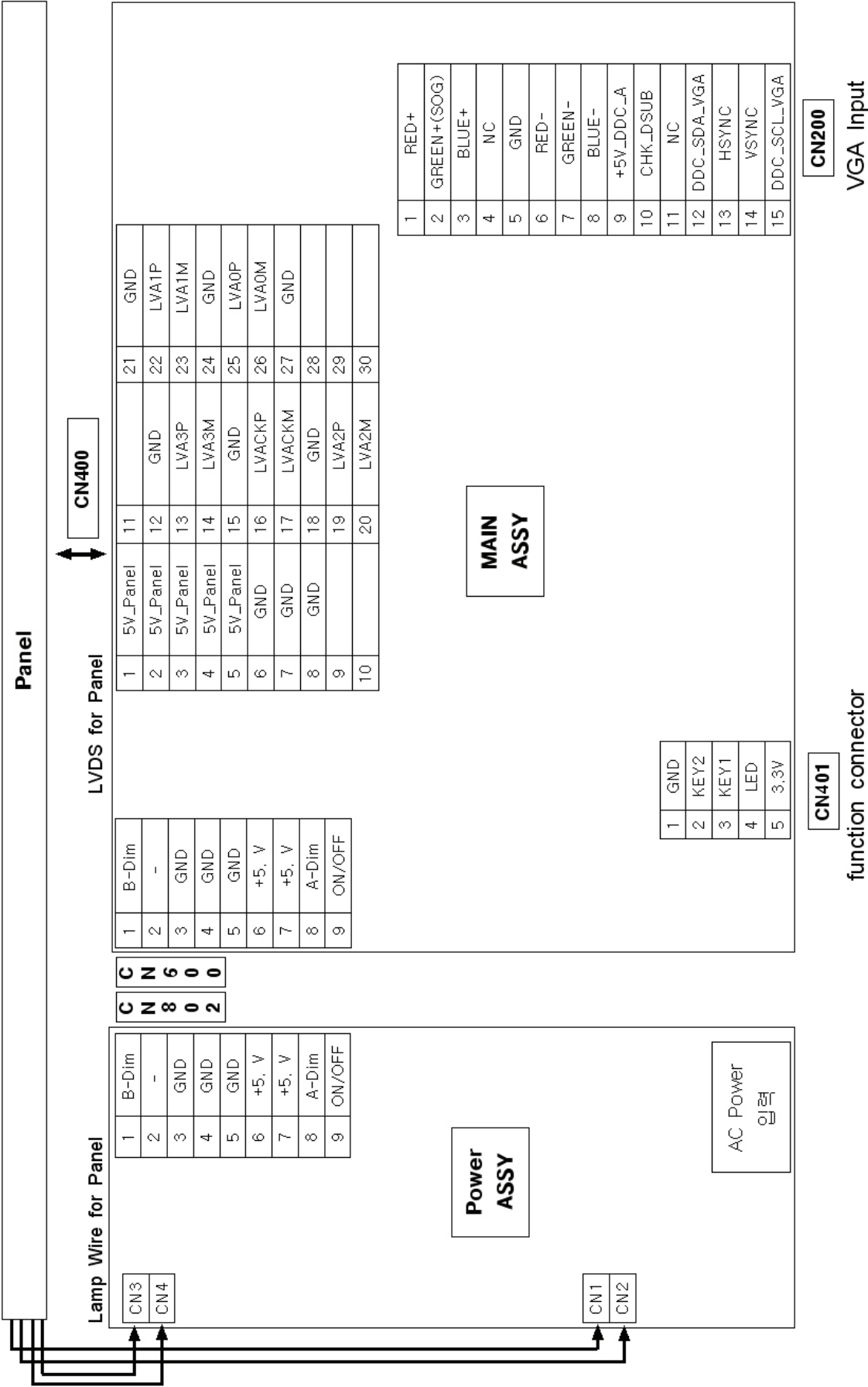
6. Wiring Diagram

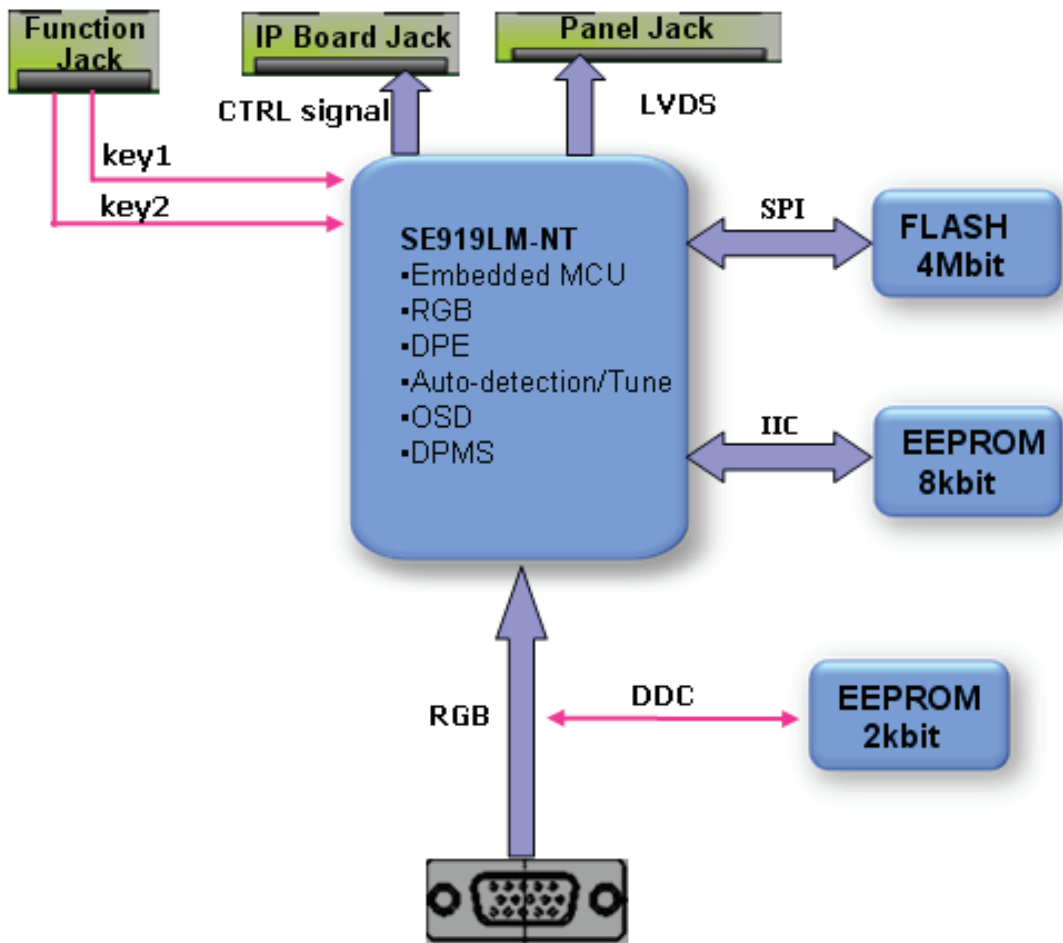
6-1. Wiring Diagram - Main Board

E1720NR / E1720NRX / E1920NR / E1920NRX / E1920NW / E1920NWX /
E2020N / E2020NX / E2220N / E2220NX / E2220NW



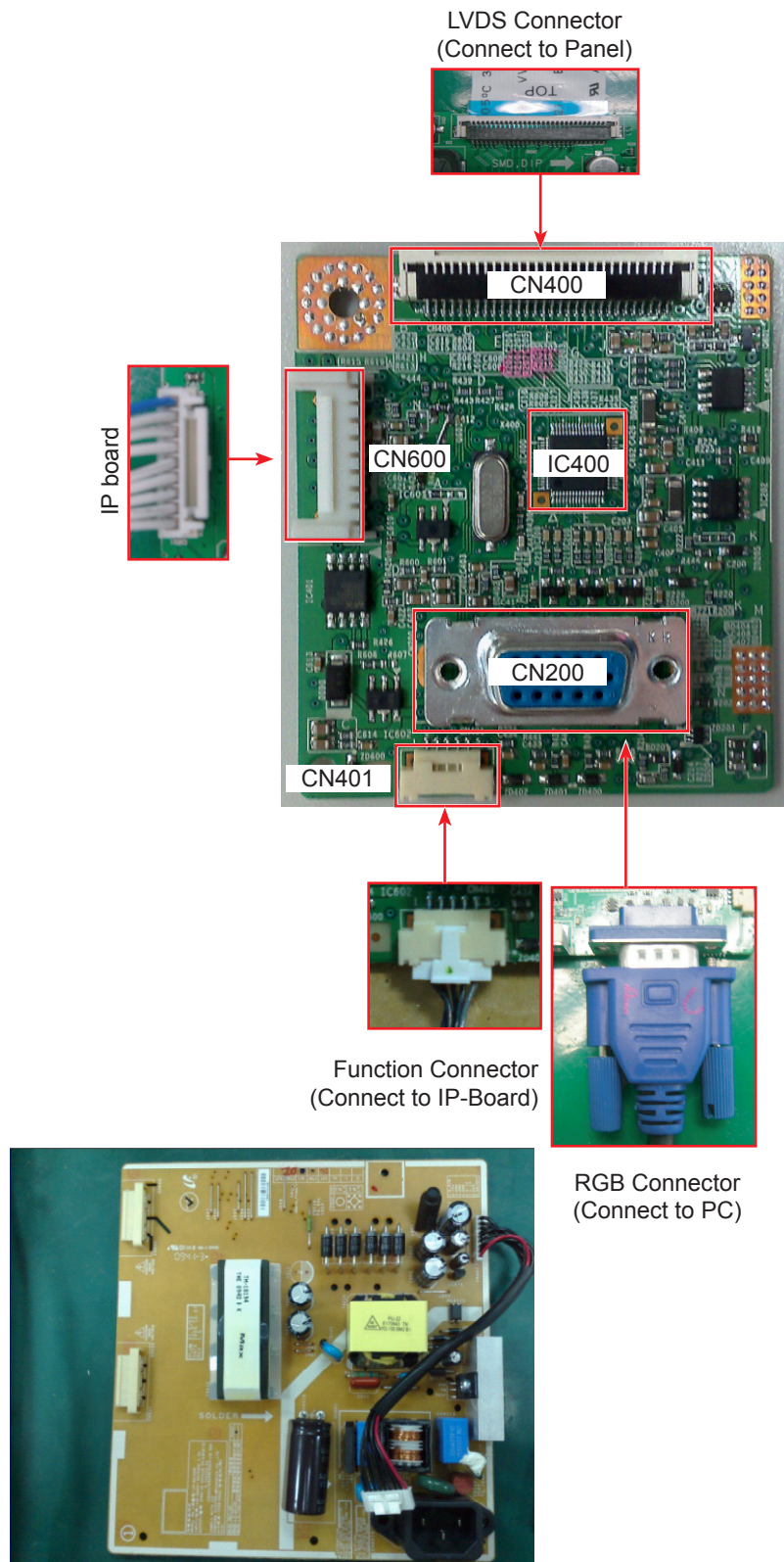
E1920N / E1920NX





NO	Block	Role Description	Remarks
1	Scaler IC200	The ADC, TMDS, Scaling and Controller are integrated on a single chip.	SE919LM-NT
2	FLASH MEMORY IC401	Stores the firmware for the Scaler. The information can be updated.	
3	EEPROM IC402	Stores the OSD, Timing etc.	NVRAM 24C08
4	EEPROM IC202	Stores the EDID data.	24C02
5	Regulator IC601, IC602	The IC for a stable DC power supply.	S-1172B33-U5T1G S-1172B18-U5T1G

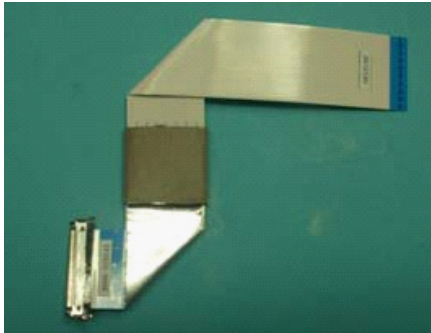
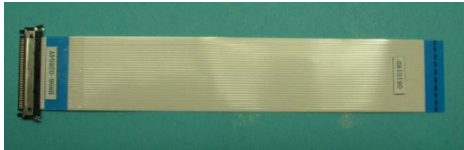
6-2. Wiring Diagram - IP Board



6-3. Connector Functions

Connector	Functions
CN802 ↔ CN600	Supplies 5V from the power board to the main board and transmits the PWM output from the power board to the inverter. *When a problem occurs: The No Power and Blank Screen errors may occur.
CN1 ~ CN4 In	Transmits the lamp current (6mA ~ 7mA) generated in the inverter to the lamp of the panel. * When a problem occurs: The Blank Screen error may occur.
CN200	VGA signal input terminal * When a problem occurs: The No RGB output error may occur.
CN400	Transmits the LVDS signals from the main board to the panel. * When a problem occurs: The Blank screen and No Power errors may occur.

6-4. Cables

Use	LVDS 30P FFC cable
Code	BN96-02854X(E1720NR/ E1720NRX)
Photo	
Code	BN96-02854W (E1920N/ E1920NX/E1920NW/ E1920NWX/E2020N/ E2020NX)
Photo	
Code	BN96-02854Y(E1920NR/ E1920NRX/ E2220N/ E2220NX)
Photo	
Code	BN96-12447G(E2220NW)
Photo	

Memo